Space Weather Forecast

Issued on Sunday, 01 September 2024 at 12:19 Local

This forecast provides a four day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales

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Space Weather Forecast Headline: Moderate-class flares expected, slight chance of Strong flares.

Analysis of Space Weather Activity over past 24 hours

Solar Activity: Activity has been Moderate with two Moderate-class flares in the past 24hrs, the peak flare at 31/1302UTC from a large region in the southeast. There are eleven sunspot regions on the disc. The largest region, situated in the southeast, has increased its magnetic complexity a little. Regions about to emerge around the east limb may counterbalance those about to rotate off the visible disk in terms of flare risk. All other regions are relatively simple and stable at the present time.

No Earth directed Coronal Mass Ejections (CMEs) have been observed.

Solar Wind / Geomagnetic Activity: The solar winds showed enhancement from CME and/or weak fast wind influence. Wind speeds varied from 360-420km/s. The Interplanetary Magnetic Field was weak to moderate throughout, varying erratically at times. The north-south component was moderately negative for much of the period, switching to become weakly positive at times. Geomagnetic activity was Quiet to Active (Kp2-4).

Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) remained at background levels with no solar radiation storms observed.

Four-Day Space Weather Forecast Summary

Solar Activity: Moderate activity is expected with a slight chance of isolated Strong flares. The main flare risk is currently from the large sunspot region in the southeast.

Solar Wind /Geomagnetic Activity: There are no Earth-directed CMEs currently expected. The ongoing enhancement may lead to further minor geomagnetic activity on Day 1 (01 Sep). The next enhancement is expected on later on Day 1, or more likely on Day 2 (02 Sep), from a narrow equatorial coronal hole. A significant enhancement is unlikely, however.

Mainly Quiet to Active (Kp2-4) activity is expected at first, with a slight chance of G1/Minor Storm intervals (Kp5) on Day 1 (01 Sep) due to ongoing enhancements, then again on Day 2 (02 Sep) with further fast wind enhancement possible. The risk then decreasing from Day 3 (03 Sep) onwards, with generally Quiet (Kp1-2) activity expected.

Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) is expected to remain at background levels, with just a slight chance of exceeding the S1/Minor Radiation Storm threshold.

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Geomagnetic Storms:

Geo-Magnetic Storm Probability (Exceedance)	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Minor or Moderate	G1 to G2	No	10	10	5	1
Strong	G3	No	1	1	1	1
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X Ray Flares:

X Ray Flares Probability	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	R1-R2 M Class	Yes	75	75	75	75
Very Active	R3 to R5 X	No	15	15	15	15

Solar Radiation Storms - (High Energy Protons):

Radiation Storms Probability (Exceedance)	Level (cm^{-2} sr^{-1} s^{-1})	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	≥ S1	No	5	5	10	10
Very Active	≥ S3 *	No	1	1	1	1

* S3 ≥ 10 MeV ≥ 1000 pfu and / or ≥ 50 MeV ≥ 10 pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)

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